

WHAT IS CLAIMED IS:

1. A SAW apparatus comprising:

a piezoelectric substrate having pyroelectric properties and having first and second main surfaces opposing each other, first and second sides opposing each other, and first and second ends opposing each other;

at least one IDT disposed on the first main surface of said piezoelectric substrate and arranged to propagate surface acoustic waves in a direction that is substantially perpendicular to the first and second sides, the surface acoustic waves being reflected by the first and second sides;

a SAW device disposed on the first main surface of said piezoelectric substrate, said SAW device including a first pyroelectric charge cancellation electrode located near an edge defined by the first end and the first main surface, and a second pyroelectric charge cancellation electrode located near an edge defined by the second end and the first main surface; and

a package housing said SAW device and which includes a plurality of electrodes which are electrically connected to said SAW device;

wherein the first and second pyroelectric charge cancellation electrodes are electrically connected via the

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electrodes on said package.

2. A SAW apparatus according to Claim 1, wherein the first and second pyroelectric charge cancellation electrodes are not electrically connected directly on said piezoelectric substrate.

3. A SAW apparatus according to Claim 1, wherein said SAW device is disposed on said piezoelectric substrate, and has a plurality of electrode patterns connected to the at least one IDT;

the plurality of electrode patterns are electrically connected to the plurality of electrodes on said package; and

the first and second pyroelectric charge cancellation electrodes are electrically connected to different electrodes of the electrodes on said package via different electrode patterns of the electrode patterns on said piezoelectric substrate, the different electrodes on said package being electrically connected within said package.

4. A SAW apparatus according to Claim 1, wherein the first pyroelectric charge cancellation electrode is arranged to extend along the edge defined by the first end and the first main surface, and the second pyroelectric charge

cancellation electrode is arranged to extend along the edge defined by the second end and the first main surface.

5. A SAW apparatus according to Claim 1, wherein the first pyroelectric charge cancellation electrode is spaced from the edge defined by the first end and the first main surface, and the second pyroelectric charge cancellation electrode is spaced from the edge defined by the second end and the first main surface.

6. A SAW apparatus according to Claim 1, further comprising a plurality of bonding wires arranged to electrically connect said SAW device to the electrodes on said package.

7. A SAW apparatus according to Claim 1, wherein said piezoelectric substrate is made of a piezo-ceramic material.

8. A SAW apparatus according to Claim 1, further comprising a plurality of interdigital electrode terminals arranged to define longitudinally coupled resonators.

9. A communication apparatus comprising at least one SAW apparatus according to Claim 1, wherein the at least one SAW apparatus defines a bandpass filter.

10. A SAW apparatus comprising:

a piezoelectric substrate having first and second main surfaces opposing each other, first and second sides opposing each other, and first and second ends opposing each other;

at least one IDT disposed on the first main surface of said piezoelectric substrate and arranged to propagate surface acoustic waves in a direction that is substantially perpendicular to the first and second sides, the surface acoustic waves being reflected by the first and second sides via edge reflection;

a SAW device disposed on the first main surface of said piezoelectric substrate, said SAW device including at least one pyroelectric charge cancellation electrode located near an edge of the piezoelectric substrate.

11. A SAW apparatus according to Claim 10, further comprising a package housing said SAW device and which includes at least one electrode which is electrically connected to said SAW device.

12. A SAW apparatus according to Claim 11, wherein the at least one pyroelectric charge cancellation electrode is electrically connected to the at least one electrode on said package.

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13. A SAW apparatus according to Claim 11, further comprising first and second pyroelectric charge cancellation electrodes which are electrically connected to each other via the at least one electrode on the package.

14. A SAW apparatus according to Claim 13, wherein said first and second pyroelectric charge cancellation electrodes are not electrically connected directly on said piezoelectric substrate.

15. A SAW apparatus according to Claim 13, wherein said SAW device is disposed on said piezoelectric substrate, and has a plurality of electrode patterns connected to the at least one IDT;

the plurality of electrode patterns are electrically connected to the plurality of electrodes on said package; and

the first and second pyroelectric charge cancellation electrodes are electrically connected to different electrodes of the electrodes on said package via different electrode patterns of the electrode patterns on said piezoelectric substrate, the different electrodes on said package being electrically connected within said package.

16. A SAW apparatus according to Claim 13, wherein the first pyroelectric charge cancellation electrode is arranged to extend along the edge defined by the first end and the first main surface, and the second pyroelectric charge cancellation electrode is arranged to extend along the edge defined by the second end and the first main surface.

17. A SAW apparatus according to Claim 13, wherein the first pyroelectric charge cancellation electrode is spaced from the edge defined by the first end and the first main surface, and the second pyroelectric charge cancellation electrode is spaced from the edge defined by the second end and the first main surface.

18. A SAW apparatus according to Claim 11, further comprising at least one bonding wire arranged to electrically connect said SAW device to the at least one electrode on said package.

19. A SAW apparatus according to Claim 10, wherein said piezoelectric substrate is made of a piezo-ceramic material.

20. A SAW apparatus according to Claim 10, further comprising a plurality of interdigital electrode terminals

arranged to define longitudinally coupled resonators.

21. A communication apparatus comprising at least one SAW apparatus according to Claim 10, wherein the at least one SAW apparatus defines a bandpass filter.

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